AMENDMENTS TO THE CLAIMS

1. (canceled)

2. (Previously presented) The multi-layer column according to claim 3, wherein each of the membrane layers comprises a fiber matrix membrane.

3. (Previously presented) A multi-layer column comprising:

a chamber having a longitudinal axis, a first end including a first aperture through which a fluid sample is introduced into the chamber, a second end including a second aperture through which the fluid sample exits the chamber, and a cross-section generally transverse to the longitudinal axis; and

a plurality of vertically stacked, microporous membrane layers directly contacting one another and stacked within the chamber, including at least a plurality of solid-phase substrates each carrying a different anti-analyte, each membrane layer being sufficiently porous to allow the fluid sample to flow through the membrane layer and to permit the sample fluid to flow through the plurality of vertically stacked membrane layers, each of the membrane layers being sized to occupy substantially all of the cross-section of the chamber;

wherein the membrane layers are substantially transparent to light of at least a selected wavelength.

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4. (Previously presented) A multi-layer column comprising:

> a chamber having a longitudinal axis, a first end including a first aperture through which a fluid sample is introduced into the chamber, a second end including a second aperture through which the fluid sample exits the chamber, and a cross-section generally transverse to the longitudinal axis; and

a plurality of vertically stacked, microporous membrane layers directly contacting one another and stacked within the chamber, including at least a plurality of solid-phase substrates each carrying a different anti-analyte, each membrane layer being sufficiently porous to allow the fluid sample to flow through the membrane layer and to permit the sample fluid to flow through the plurality of vertically stacked membrane layers, each of the membrane layers being sized to occupy substantially all of the cross-section of the chamber;

wherein the membrane layers are transparent to light.

5. (Previously presented) A multi-layer column comprising:

> a chamber having a longitudinal axis, a first end including a first aperture through which a fluid sample is introduced into the chamber, a second end including a second aperture through which the fluid sample exits the chamber, and a cross-section generally transverse to the longitudinal axis; and

a plurality of vertically stacked, microporous membrane layers directly contacting one another and stacked within the chamber, including at least a plurality of solid-phase substrates each carrying a different anti-analyte, each membrane layer being sufficiently porous to allow the fluid sample to flow through the

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membrane layer and to permit the sample fluid to flow through the plurality

of vertically stacked membrane layers, each of the membrane layers being

sized to occupy substantially all of the cross-section of the chamber;

wherein each of a plurality of the membrane layers comprises a capture layer

carrying anti-analyte and at least one light shielding layer substantially

coplanar with the capture layer.

6. (Original) The multi-layer column according to claim 5, wherein at least one of the light

shielding layers includes a light absorption sub-layer.

7. (Original) The multi-layer column according to claim 5, wherein at least one of the light

shielding layers includes a light reflection sub-layer.

8. (Previously presented) A multi-layer column comprising:

a chamber having a longitudinal axis, a first end including a first aperture through

which a fluid sample is introduced into the chamber, a second end including

a second aperture through which the fluid sample exits the chamber, and a

cross-section generally transverse to the longitudinal axis; and

a plurality of vertically stacked, microporous membrane layers directly contacting

one another and stacked within the chamber, including at least a plurality of

solid-phase substrates each carrying a different anti-analyte, each membrane

layer being sufficiently porous to allow the fluid sample to flow through the

membrane layer and to permit the sample fluid to flow through the plurality

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of vertically stacked membrane layers, each of the membrane layers being

sized to occupy substantially all of the cross-section of the chamber;

wherein at least a plurality of the solid-phase substrates carry a blocking substance.

9. (Previously presented) The multi-layer column according to claim 8, wherein

substantially all surfaces within the chamber carry a blocking substance.

10. (Previously presented) The multi-layer column according to claim 3, wherein endmost

membrane layers of the plurality of membrane layers are filter layers having pores

sized to substantially prevent flow of particles of a preselected size to central

membrane layers of the plurality of membrane layers.

11. (canceled)

12. (Previously presented) The multi-layer column according to claim 3, further

comprising a buffer solution contained within the chamber.

13. (Previously presented) The multi-layer column according to claim 3, further

comprising a waste reservoir in fluid communication with the second aperture of

the chamber.

14. (Previously presented) The multi-layer column according to claim 3, further

comprising a fluid flow port to provide a fluid exit flow path from within the

chamber.

15. (Previously presented) The multi-layer column according to claim 3, wherein each of

the anti-analytes is selected from the group consisting of antibodies, antigens,

ligand, ligand receptors, nucleic acids capable of hybridizing to an analyte nucleic

acid, enzyme-linked immunosorbent analyte, proteins or fragments of proteins

capable of forming a complex with an analyte protein or protein fragment, and

chemical compounds capable of having biological activity with a target analyte.

16. (Previously presented) The multi-layer column of claim 3, wherein the membrane

layers are substantially planar.

17. (Original) The multi-layer column according to claim 16, wherein the plane of each of

the membrane layers are substantially perpendicular to the longitudinal axis of the

chamber.

18. (Previously presented) The multi-layer column according to claim 3, wherein the

membrane layers are substantially planar, the planes of the membrane layers being

oriented at an oblique angle with respect to the longitudinal axis.

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19. (Previously presented) A multi-layer column comprising:

  a chamber having a longitudinal axis, a wall that defines the chamber, a first end

      including a first aperture through which a fluid sample is introduced into the

      chamber, a second end including a second aperture through which the fluid

      sample exits the chamber; and

  a plurality of vertically stacked, microporous membrane layers directly contacting

      one another and stacked within the chamber, including at least a plurality of

      solid-phase substrates each carrying a different anti-analyte, each membrane

      layer being sufficiently porous to allow a fluid sample to flow through the

      membrane layer and to permit the sample fluid to flow through the plurality

      of vertically stacked membrane layers, at least a plurality of the membrane

      layers engaging the wall of the chamber to inhibit the fluid sample from

      passing between the membrane layers and the wall of the chamber;

  wherein the membrane layers are substantially transparent to light of at least a

      selected wavelength.

20. (Previously presented) A method of manufacturing a multi-layer column as defined by

claim 3, comprising:

  stacking a plurality of sheets of solid support, at least some of the sheets being

      coated with an anti-analyte;

  cutting the plurality of sheets so that each of the sheets is sized to occupy

      substantially all of a cross-section of a chamber; and

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disposing the plurality of sheets in the chamber, whereby each of the sheets

occupies substantially all of the cross-section of the chamber.

21. (Original) A method of manufacturing a multi-layer column as defined by claim 19, comprising:

stacking a plurality of sheets of solid support, at least some of the sheets being

coated with an anti-analyte;

cutting the plurality of sheets so that each of the sheets is sized to engage a wall of

a chamber to inhibit a fluid sample from passing between the sheets and the

wall of the chamber; and

disposing the plurality of sheets in the chamber, whereby each of the sheets

engages the wall of the chamber.

22. (Previously presented) The multi-layer column according to claim 3, wherein each of a

plurality of the membrane layers comprises a capture layer carrying anti-analyte.

23. (Previously presented) The multi-layer column according to claim 3, wherein at least a

plurality of the solid-phase substrates carry a blocking substance.

24. (Previously presented) The multi-layer column according to claim 3, wherein

substantially all surfaces within the chamber carry a blocking substance.

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25. (Previously presented) The multi-layer column according to claim 3, wherein at least one membrane layer further comprises a light shielding layer.

26. (Previously presented) The multi-layer column according to claim 5, wherein each of the membrane layers comprises a fiber matrix membrane.

27. (Previously presented) The multi-layer column according to claim 5, wherein the membrane layers are substantially transparent to light of at least a selected wavelength.

28. (Previously presented) The multi-layer column according to claim 27, wherein at least one of the light shielding layers includes a light absorption sub-layer.

29. (Previously presented) The multi-layer column according to claim 27, wherein at least one of the light shielding layers includes a light reflection sub-layer.

30. (Previously presented) The multi-layer column according to claim 5, wherein at least a plurality of the solid-phase substrates carry a blocking substance.

31. (Previously presented) The multi-layer column according to claim 5, wherein each of the anti-analytes is selected from the group consisting of antibodies, antigens, ligand, ligand receptors, nucleic acids capable of hybridizing to an analyte nucleic acid, enzyme-linked immunosorbent analyte, proteins or fragments of proteins

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capable of forming a complex with an analyte protein or protein fragment, and chemical compounds capable of having biological activity with a target analyte.

32. (New) The multi-layer column according to claim 3, wherein the plurality of vertically stacked, microporous membrane layers comprises at least ten membrane layers.

33. (New) The multi-layer column according to claim 3, wherein the plurality of vertically stacked, microporous membrane layers comprises at least thirty membrane layers.

34. (New) The multi-layer column according to claim 3, wherein the plurality of vertically stacked, microporous membrane layers comprises at least one hundred membrane layers.

35. (New) A method of analyzing a fluid sample, comprising:

introducing the fluid sample into a multi-layer column as defined by claim 3;

allowing the fluid sample to flow through the vertical stack of membrane layers within the chamber, so that an analyte in the fluid sample is exposed to an anti-analyte carried on one of the membrane layers;

receiving an outflow from a lower aperture in the chamber; and

detecting the presence of the analyte in the multi-layer column.

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36. (New) The method of claim 35, wherein at least one anti-analyte is labeled with a label

capable of emitting light of a selected wavelength, and the presence of the analyte

is detected by sensing the light of a selected wavelength emitted by the label.